

- Steel-mesh guards will cover all external hydraulic lines.
- Each individual operator will be briefed on and will sign off on local environmental considerations specific to the project tasks.
- Access and staging areas for the three drain outfalls would utilize existing access roads and disturbed areas. Heavy recreational use has resulted in large areas of disturbance. The drains and river channel can be accessed from the existing access roads and no access ramps will be cut into the floodplain.
- Construction will occur between August 15 and April 15 after migratory bird and southwestern willow flycatcher breeding season restrictions have been lifted August 15.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

Seven other drain outfall sites were considered for enhancement in both the Albuquerque and Isleta Reaches, but were eliminated because of lack of flows, lack of drain flow management flexibility, discontinuous drain channel, poor access, or lack of readily accessible large cottonwood snags. These sites included:

Upper Corrales Drain	UCRDR
Corrales Main Canal Wasteway	CORWW
Lower Corrales Riverside Drain	LCRDR
Central Avenue Wasteway	CENWW
Lower Peralta Riverside Drain #2	LP2DR
Feeder # 3 Wasteway	FD3WW
Storey Wasteway	STYWW

Refer to Figure 1 for a map of the location of these sites.

CHAPTER 3 AFFECTED ENVIRONMENT

3.1 Introduction

This section describes the current condition of resources in the project site that may be affected by the Proposed Action. Resources and related topics presented include geomorphology and soils, hydrology, water quality, net depletions, vegetation, wildlife, fish, threatened, endangered and special status species, cultural resources, environmental justice, and Indian trust assets.

The affected environment is within the Isleta Reach of the Middle Rio Grande. This area has been identified by Reclamation and the Interstate Stream Commission, as well as the Collaborative Program, as being a reach of the Rio Grande where habitat/ecosystem restoration projects would be highly beneficial to all life stages of the RGSM.

3.2 Geomorphology and Soils

The Rio Grande in this reach is predominantly a sand bed river with low, sandy banks. The river channel tends to be straighter and more uniformly wide in these reaches than in the other reaches. There are numerous sandbars. At less than bank-to-bank flows, the river is establishing a sinuous configuration within the cleared floodway. The soils are generally derived from recent alluvial deposits, characterized by sand, loamy sand or sandy loam.

A 600-ft. wide floodway created by Kellner jetties exists throughout most of the river between the Isleta Diversion Dam and the confluence of the Rio Puerco (referred to as the Belen Reach in the 2001 Biological Opinion (USFWS 2001). Riverbanks in the Belen reach have been stabilized by extensive jetty jack fields. The river is narrowing to an average width of less than 600 feet because of reduced sediment supplies and lower peak flows. The installation of woody debris snags is listed among the likely river restoration/maintenance activities for this reach (USFWS 2001).

3.3 Water Resources

3.3.1 Hydrology

The MRG is the portion of the Rio Grande from the Colorado/New Mexico state line southward to the headwaters of Elephant Butte Reservoir, and includes the Rio Chama watershed. Most of the annual flow and discharge of the Rio Grande that reaches the MRG is generated in the headwaters of the river basin in Colorado and in the Rio Chama in northern New Mexico. Most of the discharge volume of the Rio Grande is late spring snowmelt. Late summer monsoon events produce runoff and briefly alter the hydrograph of the river. These summer flows typically carry high sediment loads; however, the operations of Cochiti Dam since 1973 have greatly reduced the total supply of sediment throughout the reaches downstream of the dam.

The operation of upstream dams (Heron, El Vado, and Abiquiu Reservoirs on the Rio Chama, Jemez Dam on the Jemez River, and Cochiti Dam on the Rio Grande) affects flows in the river by storing and releasing water in a manner that generally decreases the spring flood peaks and alters the timing of the annual hydrograph. Of the 100 greatest daily discharges since 1942 at the Central Gage (8330000), all have occurred prior to the construction of Abiquiu and Cochiti dams (USGS 2003). However, these operations do not cause significant changes in the annual flow volume. According to USGS gage data, average daily flow for the Central Gage from 1942-1974 was 1042.70 cubic feet per second (cfs), while average daily flow from 1975 - 2002 was 1395.75 cfs. Downstream effects of Cochiti Dam include the narrowing of the river channel and degradation of the riverbanks and concurrent reduction in over bank flows. In addition the diversion dams have the capability of drying up the river channel completely by diverting all flows into the irrigation system.

3.3.2 Water Quality

Overall, water quality in the Isleta Reach is good. The State of New Mexico's Clean Water Act Section 303(d)/Section 305(b) report for 2004 to 2006 indicates that designated uses including irrigation, limited warmwater fishery and wildlife habitat are fully supported in the MRG through the project area.

3.3.3 Net Depletions

The Rio Grande Compact, in effect, limits the amount of surface water that can be depleted in the MRG based upon the natural flow of the river measured at the Otowi gage near Los Alamos. In addition, the New Mexico State Engineer has determined the MRG is fully appropriated. Any increase in water use in one sector must be offset by a reduction in use in another sector to ensure that senior water rights or New Mexico's ability to meet its downstream delivery obligations are not impaired. Also, the New Mexico State Water Plan (OSE/NMISC 2003) states that habitat restoration projects should not increase net water depletions, or should depletions occur they are to be offset through a permitting process established by the State Engineer.

3.4 Vegetation

The riverbank community along the MRG consists of a narrow band of herbaceous wetland plants dominated by inland saltgrass (*Distichlis spicata*) and Baltic rush (*Juncus balticus*). Also present is a sparse growth of young cottonwood (*Populus deltoides*), coyote willow (*Salix exigua*), tamarisk (*Tamarix* sp.), and a variety of annual forbs. These riverbank communities are subject to frequent disturbance from erosion and flood events. Other species that occur in the floodplain include isolated stands of rabbitbrush (*Ericameria nauseosa*), common mullein (*Verbascum thapsus*), coyote willow, Russian olive (*Elaeagnus angustifolia*), and tamarisk. Dominant plant species found in the bosque are Rio Grande cottonwood (*P. deltoides wislizenii*) and oneseed juniper (*Juniperus monosperma*).

3.5 Wildlife

Changes in the river elevation relative to the floodplain and the hydrologic and sediment regime as well as the introduction of predatory species (game fish) have affected the fauna of the Rio Grande. Historically, the riparian corridor of the MRG supported a wide diversity of terrestrial species. Prior to increased human activities, the river system periodically contributed water and nutrients to the floodplain and supported a number of aquatic species that have been extirpated.

In the most intensive biological survey of the MRG to date, Hink and Ohmart (1984) found 18 different species of reptiles and amphibians in the MRG. Eastern fence lizard (*Sceloporus undulatus*), New Mexican whiptail (*Aspidoscelis neomexicanus*), and Woodhouse toad (*Bufo woodhousii*) were common and widespread. Several common species in the Middle Rio Grande, such as bullfrogs (*Rana catesbeiana*), leopard frogs (*Rana pipiens*), and Woodhouse toads, are ubiquitous throughout the state. Others, like the chorus frog (*Pseudacris triseriata*) and the common gartersnake (*Thamnophis sirtalis*), are unique to the MRG (Hink and Ohmart 1984).

Throughout the year, riparian communities of the MRG provide important habitat during breeding and migration for many bird species. Hink and Ohmart (1984) recorded 277 species of birds within 163 miles of MRG bosque habitat. Stahlecker and Cox (1997) documented 126 species in the Rio Grande Nature Center State Park (RGNCSP). They estimate that 60–65 species of birds breed most years in the park (Stahlecker and Cox 1997). The 10 most common species during the winter of 1996–1997 were dark-eyed junco (*Junco hyemalis*), American crow (*Corvus brachyrhynchos*), American goldfinch (*Carduelis tristis*), white-crowned sparrow (*Zonotrichia leucophrys*), American robin (*Turdus migratorius*), Canada goose (*Branta canadensis*), red-winged blackbird (*Agelaius phoeniceus*), mallard (*Anas platyrhynchos*), European starling (*Sturnus vulgaris*), and house finch (*Carpodacus mexicanus*).

The 10 most common species in the bosque during the summer of 1997 were black-chinned hummingbird (*Archilochus alexandri*), red-winged blackbird, black-headed grosbeak (*Pheucticus melanocephalus*), spotted towhee (*Pipilo maculatus*), brown-headed cowbird (*Molothrus ater*), mourning dove (*Zenaida macroura*), Bewick's wren (*Thryomanes bewickii*), black-capped chickadee (*Poecile atricapillus*), cliff swallow (*Petrochelidon pyrrhonota*), house finch, and European starling (Stahlecker and Cox 1997). The most abundant bird species found along the river in winter were mallard, Canada goose, and wood duck (*Aix sponsa*). Red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), western screech-owl (*Otus kennicottii*), and great-horned owl (*Bubo virginianus*) also occur in the proposed project area (Stahlecker and Cox 1997).

The peak nesting season for birds is April through August. The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) is the primary legislation in the United States established to conserve migratory birds. The list of the species protected by the MBTA appears in title 50, section 10.13, of the Code of Federal Regulations (50 CFR 10.13), and includes several species that may occur on the site including the bald eagle (*Haliaeetus leucocephalus*). The MBTA prohibits taking, killing, or possessing of migratory birds unless permitted by the Secretary of the Interior. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered a “take” and is potentially punishable by fines and/or imprisonment. The USFWS and the Department of Justice are the Federal agencies responsible for administering and enforcing the statute. In 1972, the MBTA was amended to include protection for migratory birds of prey (raptors). All species and subspecies of the families listed above are protected under the provisions of the 1972 amendment.

Hink and Ohmart (1984) recorded 35 mammal species in their study of the MRG, and Campbell et al. (1997) observed 14 mammal species in their survey of the Albuquerque Reach. Based on both surveys, the most common small mammals in the proposed project area include white-footed mouse (*Peromyscus leucopus*), western harvest mouse (*Reithrodontomys megalotis*), and house mouse (*Mus musculus*) (Hink and Ohmart 1984; Campbell et al. 1997). Large mammals in the area include coyotes, raccoons, beavers, muskrats, pocket gophers, and rock squirrels. Several species of bats also utilize the MRG.

3.6 Fish

The Rio Grande drainage in New Mexico historically supported at least 21 native fish species, representing ten families (Propst 1999). Since the beginning of European settlement along the Rio Grande, this system has lost a larger proportion of its native fish fauna than any other major drainage in New Mexico. Shovelnose sturgeon (*Scaphirhynchus platorhynchus*), longnose gar (*Lepisosteus osseus*), American eel (*Anguilla rostrata*), speckled chub (*Machrybopsis aestivalis aestivalis*), and Rio Grande shiner (*Notropis jemezianus*) have been extirpated from the Rio Grande in New Mexico, and blue catfish (*Ictalurus furcatus*), if it persists, occurs only in Elephant Butte Reservoir. Rio Grande bluntnose shiner (*Notropis simus simus*) and phantom shiner (*Notropis orca*) are extinct. Rio Grande silvery minnow is the only state and federally protected fish species currently inhabiting the Rio Grande, but Rio Grande sucker (*Catostomus plebeius*) and Rio Grande chub (*Gila pandora*) may warrant state protection (Propst 1999).

Common fish species of the MRG include river carpsucker (*Carpionodes carpio*), flathead chub (*Platygobio gracilis*), common carp (*Cyprinus carpio*), western mosquitofish (*Gambusia affinis*), and red shiner (*Cyprinella lutrensis*) (Platania 1993). Less common fish species present in the system are channel catfish (*Ictalurus punctatus*), fathead minnow (*Pimephales promelas*), longnose dace (*Rhinichthys cataractae*), white sucker (*Catostomus commersoni*), and the RGSM. Western mosquitofish, white sucker, and common carp are introduced species that are now common throughout the MRG.

3.7 Threatened, Endangered Species and Special Status Species

This section contains information and Reclamation's effect determination intended to serve the requirements under the provisions of Section 7 of the Endangered Species Act regarding consultation with the USFWS on potential effect to federally-listed species. Several threatened and endangered species occur in or along the Rio Grande and/or Chama River. These include the Rio Grande silvery minnow, the bald eagle (*Haliaeetus leucocephalus*), and the Southwestern willow flycatcher (*Empidonax traillii extimus*).

The agencies that have primary responsibility for the conservation of plants and animal species in New Mexico is the USFWS, under authority of the ESA; the NMDGF, under authority of the New Mexico Wildlife Conservation Act of 1974; and the New Mexico Energy, Minerals and Natural Resources Department, under authority of the New Mexico Endangered Plant Species Act. Protection from harassment, harm, or destruction of habitat is granted to species protected under the Endangered Species Act. The New Mexico Wildlife Conservation Act and New Mexico Endangered Plant Species Act protect state-listed species by prohibiting taking without proper permits.

3.7.1 Rio Grande Silvery Minnow

The Rio Grande silvery minnow was federally listed as endangered under the ESA on July 20, 1994 (FR 1994) and is listed as endangered by the State of New Mexico as well. The final recovery plan for the RGSM was released in July 1999 (FR 1999). The primary objectives are to

increase numbers of the RGSM, enhance its habitat in the Middle Rio Grande valley, and expand its current range by re-establishing the species in at least three other areas in its historic range (USFWS 2003). The species has declined as a result of impacts from dewatering, habitat destruction from dams after dewatering, channelization and flow regulation for irrigation, diminished water quality, and competition/predation by non-native species. The species is endemic to New Mexico, where it historically occupied large rivers with shifting sand substrates. The RGSM currently occupies less than 10 percent of its historic range and is found only in the Rio Grande from Cochiti Reservoir downstream to Elephant Butte Reservoir.

Natural habitat for the RGSM includes stream margins, side channels, and off-channel pools where water velocities are lower than in the main river channel. Areas with detritus and algal-covered substrate are preferred. The lee sides of islands and debris piles often serve as good habitat. Stream reaches dominated by straight, narrow, or incised channels with rapid flows would not typically be occupied by the RGSM (Sublette et al. 1990; Bestgen and Platania 1991). Critical habitat for the RGSM was designated by the USFWS from the Highway 22 Bridge downstream to the headwaters of Elephant Butte Reservoir. This designation became effective February 19, 2003 (USFWS 2003).

The RGSM is a moderate-sized, stout minnow that reaches 3.5 inches in total length. Its late spring – early summer spawning period coincides with high spring snowmelt flows (Sublette et al. 1990). This pelagic spawner produces 3,000 to 6,000 semi-buoyant, non-adhesive eggs during a spawning event (Platania 1995; Platania and Altenbach 1998); and may spawn multiple times during spring runoff and increased summer monsoon flows (USFWS 2003). The RGSM is herbivorous, feeding primarily on diatoms (Shirey 2004). It travels in schools and tolerates a wide range of conditions (Sublette et al. 1990), but generally prefers low-velocity (<0.33 feet per second, 10 cm/second) areas over silt or sand substrate that are associated with shallow (<15.8 inches [40 cm]) braided runs, backwaters, or pools (Dudley and Platania 1997). Adults are most commonly found in backwaters, pools, and sites associated with debris piles, whereas young-of-year (YOY) occupy shallow, low-velocity backwaters with silt substrates (Dudley and Platania 1997). Habitat includes stream margins, side channels, and off-channel pools where water velocities are low or reduced from main-channel velocities. Stream reaches dominated by straight, narrow, incised channels with rapid flows are not typically occupied by RGSM (Bestgen and Platania 1991).

Platania (1995) suggested that historically the downstream transport of eggs and larvae of the RGSM over long distances was likely beneficial to the survival of their populations. The spawning strategy of releasing floating eggs allows recolonization of reaches impacted during periods of natural drought (Platania 1995). Swimming studies demonstrate that RGSM can traverse distances equivalent to 50 km in 72 hours (Bestgen et al. 2003). Bestgen et al. (2003) also determined RGSM speed bursts up to 118 cm/sec (70.8 m/min) for short periods of time. The 2003 Biological Opinion (BiOp) (USFWS 2003) lists the following primary constituent elements of RGSM critical habitat:

1. Throughout its life-history, RGSM requires a hydrologic regime that provides sufficient flowing water with low to moderate currents capable of forming and maintaining a diversity of aquatic habitats, such as, but not limited to, backwaters; shallow side channels; pools; eddies;

and runs of varying depth and velocity. These characteristics are necessary for RGSM life-history stages in given seasons (e.g., habitat with sufficient flows from early spring [March] to early summer [June] to trigger spawning; flows in the summer [June] and fall [October] that do not increase prolonged periods of low or no flow; relatively constant winter flow [November through February]).

2. The presence of eddies created by debris piles, pools, or backwaters, or other refuge habitat within unimpounded stretches of flowing water of sufficient length (i.e., river miles) to provide a variation of habitats with a wide range of depth and velocities.
3. Substrates predominantly of sand or silt.
4. Water of sufficient quality to maintain natural, daily, and seasonally variable water temperatures in the approximate range of more than 1°C (35°F) and less than 30°C (85°F) and mitigate degraded conditions (e.g., decreased dissolved oxygen, increased pH).

The frequency of dewatering events and the large numbers of silvery minnows present in the Isleta Reach requiring salvage were two of the primary reasons that the three drain outfall sites were selected for habitat enhancement.

A Biological Opinion was released by the USFWS in 2003 covering Reclamation's water and river maintenance operations, the USACE's flood control operations, and Related Non-federal Actions on the MRG (USFWS 2003). The 2003 MRG BO requires habitat restoration projects on the MRG that will improve survival of all life stages of the endangered RGSM and other endangered species.

3.7.2 Southwestern Willow Flycatcher (*Empidonax trailii extimus*)

The southwestern willow flycatcher (SWFL) was listed as endangered without critical habitat designation on February 27, 1995 (FR 1995), and critical habitat was designated on July 22, 1997 (FR 1997) but was later withdrawn. In October 2004, the USFWS proposed a new designation of critical habitat (FR 2004). The final critical habitat designation became effective in November, 2005. The extent of critical habitat within the Project Area begins at the south boundary of the Isleta Pueblo and extends southward to the north boundary of the Sevilleta National Wildlife Refuge. The Los Chavez Wasteway, Peralta Wasteway and Lower Peralta Drain #1 lie within the designated critical habitat area.

The decline of the species has been attributed to loss of riparian habitat, brood parasitism, and lack of adequate protective regulations. The historic range of SWFL includes riparian areas throughout Arizona, California, Colorado, New Mexico, Texas, Utah, and Mexico (FR 1993). The flycatcher is an obligate riparian species and nests in thickets associated with streams and other wetlands where dense growth of willow, Russian olive, salt cedar, or other shrubs are present. Dense riparian woodlands are particularly important as breeding habitat. In New Mexico, the flycatcher occupies riparian habitat along the Rio Grande, Chama, Zuni, San Francisco, and Gila rivers and is found within 150 feet of a water source. Nests are frequently associated with an overstory of scattered cottonwood. (USFWS 2003). During spring and fall

migration the species occurs statewide, although migration patterns are not well understood. On the Rio Grande, the subspecies occurs near Velarde, Isleta, the Sevilleta NWR, the Bosque del Apache NWR, San Marcial, and Fort Selden.

3.7.3 Bald Eagle (*Haliaeetus leucocephalus*)

The Bald Eagle is currently listed as threatened by the USFWS and the State of New Mexico. Bald eagles are associated with habitats near open water and commonly winter adjacent to rivers and lakes, or where carrion is available. The major food items of bald eagles in New Mexico are waterfowl, fish, and carrion (NMGFD 2004c). Bald eagles are uncommon during the summer and have limited breeding sites in New Mexico, though nests have been documented in the extreme northern and western portions of the state. The number of birds wintering in the state has been steadily increasing. Wintering areas include the upper Rio Grande, and small wintering populations in the MRG and at Elephant Butte and Caballo reservoirs.

3.7.4 Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

The Western yellow-billed cuckoo is a USFWS Candidate species that occurs locally along riparian corridors throughout New Mexico. Ideal habitat appears to be dominated by cottonwood canopy with a well-developed willow understory. Yellow-billed cuckoo diet consists mainly of caterpillars but may also include various insects, some fruit, and occasional lizards or frogs (NMDGF 2004b). The breeding range of yellow-billed cuckoo extends from California and northern Utah north and east to southwestern Quebec and south to Mexico. In New Mexico, historical accounts indicate that the yellow-billed cuckoo was locally very common along the Rio Grande, but rare statewide (NMDGF 2004b). Both Hink and Ohmart (1984) and Stahlecker and Cox (1997) reported yellow-billed cuckoo as a nesting bird in the bosque of the Middle Rio Grande.

3.7.5 Common Black-Hawk (*Buteogallus anthracinus*)

The common black-hawk is listed as Threatened by the State of New Mexico and may occur in the Isleta Reach (NMDGF 2004a). Though the common black-hawk is considered rare in Valencia County, nesting was observed in the Isleta Reach during the summer of 2003 (Williams 2003). The species primarily occupies riparian woodlands, particularly areas with well-developed cottonwood galleries, or a variety of woodland and marsh habitats along permanent lowland streams. Breeding black-hawks require mature riparian forest stands near permanent water. Most birds winter south of the U.S., although some records report occurrences within southern Arizona and the Gulf coast in Texas. The diet of this riparian-obligate species consists mainly of fish, insects, crayfish, amphibians, and reptiles, but occasionally they will take small mammals and birds. Loss of riparian habitat poses the greatest risk to the species. In 1996 the NMDGF estimated 60 to 80 breeding pairs in the state.

3.7.6 New Mexican Jumping Mouse (*Zapus hudsonius luteus*)

The New Mexican jumping mouse (*Zapus hudsonius luteus*) is listed by the USFWS as a Species of Concern and is considered Threatened by the State of New Mexico. Also known as the New

Mexico meadow jumping mouse, the species is endemic to New Mexico and Arizona. The New Mexican jumping mouse is restricted to mesic habitats, preferring permanent streams, moderate to high soil moisture, and dense and diverse streamside vegetation consisting of grasses, sedges, and forbs (NMDGF 2004d). In the Rio Grande Valley, the species occurs mainly along the edges of permanent ditches and cattail stands. The proposed project area does not contain any wetland areas with cattails or dense herbaceous vegetation. Recent surveys (Hink and Ohmart 1984) have failed to detect the New Mexican jumping mouse north of Isleta Marsh. It is therefore unlikely that the species occupies either the riparian floodplain or any in-channel islands of the Middle Rio Grande.

3.8 Cultural Resources

Cultural Resources include archeological sites, sites eligible for the State Register of Cultural Properties and/or the National Register of Historic Places (NRHP), and properties of traditional religious or cultural importance (Traditional Cultural Properties [TCP's]). The probability of any artifacts that might have once existed in the floodplain of the Rio Grande have a very low probability of still being present (J. Hanson, pers. comm.). Archaeological resources that are listed on the NRHP, or are eligible for listing, are protected under the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470). A records search was conducted in the Archaeological Records Management Section (ARMS) database of the New Mexico State Historic Preservation Division. The entire MRG conveyance and delivery system as a unit is eligible for listing on the National Register of Historic Properties.

3.9 Socioeconomics and Environmental Justice

Socioeconomic resources include population and economic activity. Some related secondary components, such as housing availability and public services, are not considered in this analysis because the action has no potential to generate measurable changes in populations that will create demand for these resources. Statistics at the state, county and local level are used to describe the socioeconomic context. The proposed project is in Valencia County, New Mexico. The population in Valencia County was estimated at 69,417 in 2005 (U.S. Census Bureau 2006). It is approximately 1,068 square miles with 62 persons per square mile.

Valencia County is within the Albuquerque metro area. In 2004, Valencia County had a per capita personal income (PCPI) of \$22,968, which compares to the state average PCPI of \$26,184 (U.S. Dept. of Commerce 2006). Federal expenditures in New Mexico accounted for \$19,863 Billion in 2004 (U.S. Census Bureau 2004). State expenditures in 2002 were \$63,611 Million (New Mexico Dept. Finance & Admin. 2002).

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994), directs federal agencies (as well as State agencies receiving federal funds) to assess the effects of their actions on minority and/or low-income populations within their region of influence. The order requires agencies to develop strategies to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

No population, including populations defined as low-income or minority, would be disproportionately impacted by the Proposed Action or by the No Action Alternative.

3.10 Indian Trust Assets

The U.S. has an Indian trust responsibility (trust responsibility) to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statutes, and executive orders, which rights are sometimes further interpreted through court decisions and regulations. This trust responsibility requires that all Federal agencies, including Reclamation, take all actions reasonably necessary to protect trust assets. Indian trust assets (ITAs) are legal interests in property held in trust by the U.S. for Indian tribes or individuals. “Legal interest” means there is a property interest for which a legal remedy, such as compensation or injunction, may be obtained if there is improper interference. For example, ITAs include land, minerals, hunting and fishing rights, and water rights. A characteristic of an ITA is that it cannot be sold, leased, or otherwise alienated without the U.S.’ approval. Reclamation’s Indian trust policy was stated in a July 2, 1993 memorandum from Reclamation’s Commissioner. The policy statement is: “Reclamation will carry out its activities in a manner which protects trust assets and avoids adverse impacts when possible. When Reclamation cannot avoid adverse impacts, it will provide appropriate mitigation or compensation.”

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

The anticipated potential effects of the alternatives to the previously described environmental issues and resources in Chapter 3 are summarized in Table 2.

4.2 Geomorphology and Soils

No Action

There would be no change from the present geomorphology and soils along the MRG.

Proposed Action

It is unlikely that the overall geomorphology and soils would be affected. There would be a slight increase in the number of deeper water pools in the three drain outfalls. Soils would not be affected as the disturbance is very small.